

10/691670

## Refine Search

Your wildcard search against 10000 terms has yielded the results below.

***Your result set for the last L# is incomplete.***

The probable cause is use of unlimited truncation. Revise your search strategy to use limited truncation.

### Search Results -

Terms	Documents
L20 and (tim\$ near2 averag\$)	1

Database:

US Pre-Grant Publication Full-Text Database  
 US Patents Full-Text Database  
 US OCR Full-Text Database  
 EPO Abstracts Database  
 JPO Abstracts Database  
 Derwent World Patents Index  
 IBM Technical Disclosure Bulletins

Search:

L21

Refine Search

Recall Text

Clear

Interrupt

### Search History

DATE: Wednesday, June 22, 2005 [Printable Copy](#) [Create Case](#)

**Set Name Query**  
side by side

**Hit Count Set Name**  
result set

DB=USPT; THES=ASSIGNEE; PLUR=YES; OP=OR

<u>L21</u>	L20 and (tim\$ near2 averag\$)	1	<u>L21</u>
<u>L20</u>	\$589815.pn	1	<u>L20</u>
<u>L19</u>	L8 and (tim\$ near2 averag\$)	0	<u>L19</u>
<u>L18</u>	L17 and (tim\$ near2 averag\$)	0	<u>L18</u>
<u>L17</u>	L16 not (l8 or l15)	3	<u>L17</u>
<u>L16</u>	L13 and 701/36,41.ccls.	3	<u>L16</u>
<u>L15</u>	L14 and (tim\$ near2 averag\$)	1	<u>L15</u>
<u>L14</u>	L13 and (steer\$ near2 angle).clm.	19	<u>L14</u>
<u>L13</u>	L12 and (left\$ with right\$ with wheel\$)	25	<u>L13</u>
<u>L12</u>	L11 and accelerat\$ and (yaw near2 rate)	32	<u>L12</u>
<u>L11</u>	L10 and (ratio\$ with (turn\$ or rotat\$) with angle)	131	<u>L11</u>

<u>L10</u>	L9 and (front\$ with rear\$)	882	<u>L10</u>
<u>L9</u>	L2 and @ad<=20021029	1545	<u>L9</u>
<u>L8</u>	L7 and (rotat\$ with angl\$).clm.	1	<u>L8</u>
<u>L7</u>	L6 and (steer\$ near2 angle).clm.	7	<u>L7</u>
<u>L6</u>	L5 and (angl\$ with turn\$ with ratio)	9	<u>L6</u>
<u>L5</u>	L4 and @ad<=20021029	189	<u>L5</u>
<u>L4</u>	L3 and accelerat\$ and (yaw near2 rate)	203	<u>L4</u>
<u>L3</u>	L2 and accelerat\$ and (left\$ near2 wheel) and (right near2 wheel)	368	<u>L3</u>
<u>L2</u>	((steer\$ near2 angle) with sens\$) and (rotat\$ with angle)	1656	<u>L2</u>
<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; THES=ASSIGNEE; PLUR=YES;</i>			
<i>OP=OR</i>			
<u>L1</u>	steer\$ near2 angle	28190	<u>L1</u>

END OF SEARCH HISTORY

## Create A Case

---

Select?	Database	Query	PluralOp	Thesaurus	Set Name
<input checked="" type="checkbox"/>	PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD	steer\$ near2 angle	YES	ORASSIGNEE	L1
<input checked="" type="checkbox"/>	USPT	((steer\$ near2 angle) with sens\$) and (rotat\$ with angle)	YES	ORASSIGNEE	L2
<input checked="" type="checkbox"/>	USPT	L2 and accelerat\$ and (left\$ near2 wheel) and (right\$ near2 wheel)	YES	ORASSIGNEE	L3
<input checked="" type="checkbox"/>	USPT	L3 and accelerat\$ and (yaw near2 rate)	YES	ORASSIGNEE	L4
<input checked="" type="checkbox"/>	USPT	L4 and @ad<=20021029	YES	ORASSIGNEE	L5
<input checked="" type="checkbox"/>	USPT	L5 and (angl\$ with turn\$ with ratio)	YES	ORASSIGNEE	L6
<input checked="" type="checkbox"/>	USPT	L6 and (steer\$ near2 angle).clm.	YES	ORASSIGNEE	L7
<input checked="" type="checkbox"/>	USPT	L7 and (rotat\$ with angl\$).clm.	YES	ORASSIGNEE	L8
<input checked="" type="checkbox"/>	USPT	L2 and @ad<=20021029	YES	ORASSIGNEE	L9
<input checked="" type="checkbox"/>	USPT	L9 and (front\$ with rear\$)	YES	ORASSIGNEE	L10
<input checked="" type="checkbox"/>	USPT	L10 and (ratio\$ with (turn\$ or rotat\$) with angle)	YES	ORASSIGNEE	L11
<input checked="" type="checkbox"/>	USPT	L11 and accelerat\$ and (yaw near2 rate)	YES	ORASSIGNEE	L12
<input checked="" type="checkbox"/>	USPT	L12 and (left\$ with right\$ with wheel\$)	YES	ORASSIGNEE	L13
<input checked="" type="checkbox"/>	USPT	L13 and (steer\$ near2 angle).clm.	YES	ORASSIGNEE	L14
<input checked="" type="checkbox"/>	USPT	L14 and (tim\$ near2 averag\$)	YES	ORASSIGNEE	L15
<input checked="" type="checkbox"/>	USPT	L13 and 701/36,41.ccls.	YES	ORASSIGNEE	L16
<input checked="" type="checkbox"/>	USPT	L16 not (l8 or l15)	YES	ORASSIGNEE	L17
<input checked="" type="checkbox"/>	USPT	L17 and (tim\$ near2 averag\$)	YES	ORASSIGNEE	L18
<input checked="" type="checkbox"/>	USPT	L8 and (tim\$ near2 averag\$)	YES	ORASSIGNEE	L19

<input checked="" type="checkbox"/>	USPT	5589815.pn.	YES	ORASSIGNEE L20
<input checked="" type="checkbox"/>	USPT	L20 and (tim\$ near2 averag\$)	YES	ORASSIGNEE L21

Please enter the case name:

---

---

### Rules for naming Cases

- Case names can only contain alphanumeric characters including underscore (\_).
- Any other special characters or punctuation characters will be automatically removed prior to saving the case.
- All white space characters will be replaced by an underscore.

[First Hit](#) [Fwd Refs](#) [Previous Doc](#) [Next Doc](#) [Go to Doc#](#)



Generate Collection

☐ Print

L16: Entry 1 of 3

File: USPT

Mar 16, 2004

US-PAT-NO: 6708088

DOCUMENT-IDENTIFIER: US 6708088 B2

TITLE: Vehicle behavior control apparatus

DATE-ISSUED: March 16, 2004

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Matsuno; Koji	Tokyo			JP
Ichikawa; Katsufumi	Tokyo			JP
Kogure; Masaru	Tokyo			JP
Hiwatashi; Yutaka	Tokyo			JP
Ushijima; Takayuki	Tokyo			JP

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Fuji Jukogyo Kabushiki Kaisha	Tokyo			JP	03

APPL-NO: 10/ 132017 [\[PALM\]](#)

DATE FILED: April 22, 2002

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	P.2001-126240	April 24, 2001

INT-CL: [07] [G06 F 7/00](#)

US-CL-ISSUED: 701/1; 701/41, 701/42, 701/74

US-CL-CURRENT: [701/1](#); [701/41](#), [701/42](#), [701/74](#)

FIELD-OF-SEARCH: 701/1, 701/36, 701/37, 701/38, 701/41, 701/51, 701/70-74, 701/78-80

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

☐ Search Selected☐ Search All☐ Clear

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <a href="#">5333058</a>	July 1994	Shiraishi et al.	364/424.05
<input type="checkbox"/> <a href="#">5671143</a>	September 1997	Graber	364/426.016

<input type="checkbox"/> <u>5700073</u>	December 1997	Hiwatashi et al.	303/146
<input type="checkbox"/> <u>5742917</u>	April 1998	Matsuno	701/69
<input type="checkbox"/> <u>5869753</u>	February 1999	Asanuma et al.	73/117.3
<input type="checkbox"/> <u>6161905</u>	December 2000	Hac et al.	303/146

## FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
19856792	June 1999	DE	
0943514	September 1999	EP	
05278489	October 1993	JP	
06072169	March 1994	JP	

ART-UNIT: 3661

PRIMARY-EXAMINER: Camby; Richard M.

ATTY-AGENT-FIRM: Darby &amp; Darby

## ABSTRACT:

A vehicle behavior control apparatus is divided into three major parts, sensors for detecting engine and vehicle operating conditions, a target yaw rate establishing section for establishing the rate and differential limiting apparatuses for selectively varying distribution ratios of driving force between front and rear wheels and/or between left and right wheels. The target yaw rate establishing section calculates a target yaw rate based on a vehicle mass, a mass distribution ratio between front and rear axles, front and rear axle mass, distances between front and rear axles and a center of gravity, a steering angle of a front wheel, and front and rear wheels equivalent cornering powers. A steady state yaw rate gain is separately calculated for left and right steering, respectively. A reference yaw rate is calculated by correcting a time constant of lag of yaw rate with respect to steering based on estimated road friction coefficient.

28 Claims, 10 Drawing figures

[Previous Doc](#)      [Next Doc](#)      [Go to Doc#](#)

[First Hit](#) [Fwd Refs](#) [Previous Doc](#) [Next Doc](#) [Go to Doc#](#)

Generate Collection

Print

L16: Entry 2 of 3

File: USPT

Mar 26, 1996

US-PAT-NO: 5502639

DOCUMENT-IDENTIFIER: US 5502639 A

TITLE: Controlling apparatus of steering angle of rear wheels of four-wheel steering vehicle

DATE-ISSUED: March 26, 1996

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fukunaga; Takashi	Osaka			JP
Segawa; Akiyoshi	Osaka			JP

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
Matsushita Electric Industrial Co., Ltd.	Osaka			JP		03

APPL-NO: 08/ 392626 [PALM]

DATE FILED: February 22, 1995

## PARENT-CASE:

This is a divisional of now abandoned application Ser. No. 08/119,642, filed Sep. 13, 1993, abandoned, which in turn is a divisional of application Ser. No. 07/743,225, filed Aug. 9, 1991, now U.S. Pat. No. 5,274,555.

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	2-212861	August 10, 1990
JP	2-409044	December 28, 1990
JP	3-69708	April 2, 1991

INT-CL: [06] B62 D 5/04

US-CL-ISSUED: 364/424.05; 180/79.1, 180/140, 180/142, 280/91

US-CL-CURRENT: 701/41; 180/412, 180/445

FIELD-OF-SEARCH: 364/424.05, 280/91, 180/65.1, 180/65.3, 180/79.1, 180/140-143

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

Search ALL

Clear

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>4730839</u>	March 1988	Miyoshi	280/91
<input type="checkbox"/> <u>4767588</u>	August 1988	Ito,	180/79.1
<input type="checkbox"/> <u>4768602</u>	September 1988	Inoue et al.	364/424.05
<input type="checkbox"/> <u>4828061</u>	May 1989	Kimbrough et al.	180/79.1
<input type="checkbox"/> <u>4834205</u>	May 1989	Mizuno et al.	180/79.1
<input type="checkbox"/> <u>4836319</u>	June 1989	Haseda et al.	180/142
<input type="checkbox"/> <u>4878557</u>	November 1989	Shibahata et al.	180/142
<input type="checkbox"/> <u>4947327</u>	August 1990	Kawagoe	180/141
<input type="checkbox"/> <u>4961144</u>	October 1990	Yabe et al.	364/424.05
<input type="checkbox"/> <u>5001636</u>	March 1991	Shiraishi et al.	364/424.05
<input type="checkbox"/> <u>5001637</u>	March 1991	Shiraishi et al.	364/424.05
<input type="checkbox"/> <u>5018070</u>	May 1991	Eguchi	180/79.1
<input type="checkbox"/> <u>5019982</u>	May 1991	Furukawa	364/424.05
<input type="checkbox"/> <u>5064013</u>	November 1991	Lenz	180/65.3
<input type="checkbox"/> <u>5076381</u>	December 1991	Daido et al.	180/79.1
<input type="checkbox"/> <u>5097918</u>	March 1992	Daido et al.	364/424.05
<input type="checkbox"/> <u>5145022</u>	September 1992	Kido	280/91
<input type="checkbox"/> <u>5156229</u>	October 1992	Yasui et al.	180/79.1
<input type="checkbox"/> <u>5159553</u>	October 1992	Karnopp et al.	180/79.1
<input type="checkbox"/> <u>5267160</u>	November 1993	Ito et al.	180/141
<input type="checkbox"/> <u>5274576</u>	December 1993	Williams	364/424.05
<input type="checkbox"/> <u>5285390</u>	February 1994	Haseda	364/424.05
<input type="checkbox"/> <u>5313389</u>	May 1994	Yasui	364/424.05
<input type="checkbox"/> <u>5333058</u>	July 1994	Shiraishi et al.	364/424.05

## FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0233012	August 1987	EP	
0244232	November 1987	EP	
3911453	October 1989	DE	
61-241274	October 1986	JP	
61-295175	December 1986	JP	
63-41282	February 1988	JP	
63-192667	August 1988	JP	
1-306370	December 1989	JP	
3-28083	February 1991	JP	
WOA8806546	September 1988	WO	
WOA8911992	December 1989	WO	



## OTHER PUBLICATIONS

Patent Abstracts Of Japan, vol. 13, No. 567 (M-908) 15 Dec. 1989 \* JP-A-12 37 263 (Aisin Seiki Co., Ltd.) 21 Sep. 1989 \*abstract\*.

Patent Abstracts Of Japan, vol. 15, No. 203 (M-1116) 24 May 1991 & JP-A-30 54 076 (Matsushita Electric Ind. Co., Ltd.) 8 Mar. 1991 \*abstract\*.

E. Samal "Grundriss der praktischen Regelungstechnik", 1980, R. Oldenbourg Verlag, Munchen 11th edition, part 5: Regelkreise mit stetigen Reglern, sections 5.6 and 5.7, pp. 292-307 \*the whole document\*.

ART-UNIT: 234

PRIMARY-EXAMINER: Chin; Gary

ATTY-AGENT-FIRM: Wenderoth, Lind & Ponack

## ABSTRACT:

A steering angle of rear wheels of a four-wheel steering vehicle is controlled so that a quick response of an electric motor mounted in the rear wheels is achieved only when it is necessary, thereby avoiding wasteful consumption of power. In addition, a yaw rate feedback system is kept stable. When unstable vibration of the electric motor is detected, a gain to the yaw rate is adjusted.

3 Claims, 19 Drawing figures

[Previous Doc](#)

[Next Doc](#)

[Go to Doc#](#)

[First Hit](#) [Fwd Refs](#) [Previous Doc](#) [Next Doc](#) [Go to Doc#](#)  
End of Result Set

☐ [Generate Collection](#) [Print](#)

L16: Entry 3 of 3

File: USPT

Jan 19, 1988

US-PAT-NO: 4720790

DOCUMENT-IDENTIFIER: US 4720790 A

TITLE: Apparatus for controlling steer angle of rear wheels of vehicle

DATE-ISSUED: January 19, 1988

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Miki; Kazuo	Aichi			JP
Sumi; Kazumasa	Nagoya			JP
Fukui; Katsuhiko	Nagoya			JP
Hayashi; Yasutaka	Seto			JP
Ishiguro; Michio	Toyota			JP

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
Kabushiki Kaisha Toyota Chuo Kenkyusho	Aichi			JP		03

APPL-NO: 06/ 734332 [\[PALM\]](#)

DATE FILED: May 15, 1985

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	59-102202	May 21, 1984
JP	59-163428	August 2, 1984

INT-CL: [04] B62D 5/06

US-CL-ISSUED: 364/424; 180/140, 180/142, 280/91

US-CL-CURRENT: [701/41](#); [180/415](#)

FIELD-OF-SEARCH: 364/559, 364/424, 364/426, 180/140, 180/142, 180/143, 180/79.1, 280/91

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

[Search Selected](#) [Search ALL](#) [Clear](#)

PAT-NO

ISSUE-DATE

PATENTEE-NAME

US-CL

<input type="checkbox"/> 4418780	December 1983	Ito et al.	180/142
<input type="checkbox"/> 4441572	April 1984	Ito et al.	180/140
<input type="checkbox"/> 4522417	June 1985	Sano et al.	280/91
<input type="checkbox"/> 4527654	July 1985	Shibahata et al.	180/140
<input type="checkbox"/> 4552239	November 1985	Kanazawa et al.	180/140
<input type="checkbox"/> 4566710	January 1986	Furukawa et al.	180/140 X
<input type="checkbox"/> 4572316	February 1986	Kanazawa et al.	180/143
<input type="checkbox"/> 4597462	July 1986	Sano et al.	180/140
<input type="checkbox"/> 4598788	July 1986	Serizawa et al.	180/140

## FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0150858	August 1985	EP	180/140
0165706	December 1985	EP	
0044568	March 1982	JP	

ART-UNIT: 234

PRIMARY-EXAMINER: Lall; Parshotam S.

ASSISTANT-EXAMINER: Black; Thomas G.

ATTY-AGENT-FIRM: Parkhurst &amp; Oliff

## ABSTRACT:

A rear wheel steer angle controlling apparatus for vehicles having steerable front and rear wheels, adapted for controlling the steer angle of rear wheels in response to the operation of the steering wheel for steering the front wheels. When the steering wheel is operated quickly, a rear wheel steer angle is formed in the counter direction to the direction of the front wheel steer angle, so that the response to the steering input for turning the vehicle is improved. Conversely, when the steering wheel is operated slowly, a rear wheel steer angle is formed in the same direction as the front wheel steer angle, thus enhancing the stability of the vehicle running straight. When the vehicle is running at a high speed, the rear wheel steer angle is formed always in the same direction as the front wheel steer angle regardless of the speed of operation of the steering wheel, so that the steering stability during high speed running is improved. When a yawing moment is generated due to a disturbance such as lateral wind, the rear wheel steer angle is automatically controlled in such a manner as to negate the yawing moment, thus compensating for the lateral displacement of the vehicle without requiring correcting steering operation by the driver.

35 Claims, 39 Drawing figures

[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)